

AMENDMENTS TO THE CLAIMS

1-3. (Cancelled)

4. (Currently Amended) The ~~sensor~~ bearing apparatus according to claim 3 16, wherein the thermistor is constructed by a NTC thermistor having a negative temperature characteristic.

5. (Currently Amended) The ~~sensor~~ bearing apparatus according to claim 3 16, wherein the thermistor is constructed by one of a PTC thermistor and a silicon thermistor, and the one of the PTC thermistor and the silicon thermistor has a positive temperature characteristic.

6. (Currently Amended) A bearing apparatus, comprising:

a sensor ~~according to claim 1, for a bearing, comprising:~~

a sensor being incorporated into the bearing or its surroundings, wherein
the sensor is configured to decrease an output voltage in conjunction with an
increase of measured temperature,

the sensor is a temperature sensor which detects an abnormality of the bearing,
and

an output voltage characteristic of the temperature sensor is linearized within a
temperature range of from 0°C to 200°C; and
at least one of a rotation speed sensor and a vibration sensor.

7. (Original) The bearing apparatus according to claim 6, further comprising:

a temperature detection circuit; and

a cable for connecting the sensor and the temperature detection circuit.

8. (Original) The bearing apparatus according to claim 7, wherein the temperature detection circuit has a resistor for converting an output of the sensor into a voltage.

9. (Original) An abnormality determining apparatus for an axle bearing, comprising: a bearing apparatus according to claim 6.

10. (Cancelled)

11. (Currently Amended) A bearing apparatus, comprising:
a sensor for a bearing comprising: according to claim 2.

a sensor being incorporated into the bearing or its surroundings,
wherein

the sensor is configured to decrease an output voltage in conjunction with an increase of measured temperature,

the sensor is a temperature sensor which detects an abnormality of the bearing and
one of more fixed resistors is connected to the sensor; and
at least one of a rotation speed sensor and a vibration sensor.

12. (Original) The bearing apparatus according to claim 11, further comprising:
a temperature detection circuit; and
a cable for connecting the sensor and the temperature detection circuit.

13. (Original) The bearing apparatus according to claim 12, wherein the temperature detection circuit has a resistor for converting an output of the sensor into a voltage.

14. (Original) An abnormality determining apparatus for an axle bearing, comprising: a bearing apparatus according to claim 11.

15. (Cancelled)

16. (Currently Amended) A bearing apparatus, comprising:

a sensor for a bearing comprising: according to claim 3.

a sensor being incorporated into the bearing or its surroundings,

wherein

the sensor is configured to decrease an output voltage in conjunction with an increase of measured temperature,

the sensor is a temperature sensor which detects an abnormality of the bearing,

one or more fixed resistors is connected to the sensor, and

the sensor is constructed by a thermistor, and the one or more fixed resistor are connected in parallel with the thermistor; and

at least one of a rotation speed sensor and a vibration sensor.

17. (Original) The bearing apparatus according to claim 16, further comprising:

a temperature detection circuit; and

a cable for connecting the sensor and the temperature detection circuit.

18. (Original) The bearing apparatus according to claim 17, wherein

the temperature detection circuit has a resistor for converting an output of the sensor into a voltage.

19. (Original) An abnormality determining apparatus for an axle bearing, comprising:

a bearing apparatus with the sensor according to claim 16.

20. (Cancelled)

21. (Currently Amended) ~~The A bearing apparatus according to claim 8,~~ comprising:
a sensor for a bearing comprising:
a sensor being incorporated into the bearing or its surroundings,
wherein
the sensor is configured to decrease an output voltage in conjunction with an
increase of measured temperature,
the sensor is a temperature sensor which detects an abnormality of the bearing,
and
an output voltage characteristic of the temperature sensor is linearized within a
temperature range of from 0°C to 200°C;
a temperature detection circuit; and
a cable for connecting the sensor and the temperature detection circuit, wherein
the temperature detection circuit has a resistor for converting an output of the sensor into
a voltage, and
~~wherein~~ an output V_T of the temperature sensor from the temperature detection circuit
satisfies the following equations:

$$V_T = \frac{R_{16}}{R_{16} + R_T} \times V_S; \text{ and}$$

$$R_T = \frac{R_t \times R_{15}}{R_t + R_{15}},$$

wherein

R_{16} is a first resistance value,

R_t is an electric resistance value of the thermistor,

R_{15} is a second resistance value,

R_T is a combined resistance value of the thermistor and the second resistance value, and

V_S is a power voltage supplied to the temperature sensor.

22. (Currently Amended) ~~The A~~ bearing apparatus ~~according to claim 13~~, comprising:
a sensor for a bearing comprising:

a sensor being incorporated into the bearing or its surroundings,

wherein

the sensor is configured to decrease an output voltage in conjunction with an
increase of measured temperature,

the sensor is a temperature sensor which detects an abnormality of the bearing,

and

one or more fixed resistors is connected to the sensor;

a temperature detection circuit; and

a cable for connecting the sensor and the temperature detection circuit,

wherein

the temperature detection circuit has a resistor for converting an output of the sensor into
a voltage, and

~~wherein~~ an output V_T of the temperature sensor from the temperature detection circuit
satisfies the following equations:

$$V_T = \frac{R_{16}}{R_{16} + R_T} \times V_s; \text{ and}$$

$$R_T = \frac{R_t \times R_{15}}{R_t + R_{15}},$$

wherein

R_{16} is a first resistance value,

R_t is an electric resistance value of the thermistor,

R_{15} is a second resistance value,

R_T is a combined resistance value of the thermistor and the second resistance value, and

V_s is a power voltage supplied to the temperature sensor.

23. (Currently Amended) ~~The A bearing apparatus according to claim 18, comprising:~~
a sensor for a bearing comprising:

a sensor being incorporated into the bearing or its surroundings,

wherein

the sensor is configured to decrease an output voltage in conjunction with an increase of measured temperature,

the sensor is a temperature sensor which detects an abnormality of the bearing,

one or more fixed resistors is connected to the sensor,

the sensor is constructed by a thermistor, and the one or more fixed resistor are connected in parallel with the thermistor,

a temperature detection circuit; and

a cable for connecting the sensor and the temperature detection circuit,

wherein

the temperature detection circuit has a resistor for converting an output of the sensor into a voltage, and

~~wherein~~ an output V_T of the temperature sensor from the temperature detection circuit satisfies the following equations:

$$V_T = \frac{R_{16}}{R_{16} + R_T} \times V_S; \text{ and}$$

$$R_T = \frac{R_t \times R_{15}}{R_t + R_{15}},$$

wherein

R_{16} is a first resistance value,

R_t is an electric resistance value of the thermistor,

R_{15} is a second resistance value,

R_T is a combined resistance value of the thermistor and the second resistance value, and

V_S is a power voltage supplied to the temperature sensor.